



Attorney's Docket No. 1016660-000038

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re Patent Application of

Oscar Chi-Lim AU et al.

Application No.: 09/512,378

Filed: February 25, 2000

For: ENHANCING AN IMAGE, SUCH AS AN  
IMAGE HAVING BI-VALUED PIXEL  
VALUES

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Group Art Unit: 2625  
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Examiner: JAMES A. THOMPSON  
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Confirmation No.: 7227  
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**PRE-APPEAL BRIEF REQUEST FOR REVIEW**

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

Applicants request review of the final rejection of claims 2-9, 11, 12, 16 and 19, set forth in the Office Action dated December 15, 2005. No amendments are being filed with this Request. The Request is being filed with a Notice of Appeal.

**Background**

The claimed invention is directed to the enhancement of images on a pixel-by-pixel basis. As described in the background portion of the application, one exemplary application of the invention is a process known as "inverse half toning", in which binary pixel values for an image are converted into values within a continuous range, e.g. 0-255. Preferably, this method is carried out in an iterative fashion, in which a pixel value resulting from one iteration is updated in a successive iteration. The updating that occurs during each iteration is succinctly described on page 6, lines 17-32 of the application.

The coefficient  $a_{ij}$  that appears in the equation on page 6, line 28 is a significance coefficient, that reflects the likelihood that the value of a pixel in the neighborhood of the target pixel being processed gives useful information about the value of the target pixel in the final result. The calculation of this coefficient is described at page 6, line 33 to page 7, line 32.

The Rejections

In the interest of brevity, for purposes of this review it is sufficient to consider claim 2 as an exemplary claim. The first step recited in claim 2 is defining a set of neighborhood pixels of an individual pixel. This neighborhood includes the individual pixel, i.e. the target pixel, and a plurality of pixels proximate the individual pixel. Figures 4(a)-4(c) illustrate examples of neighborhood functions.

The second step of claim 2 is "deriving for each pixel of the neighborhood, a significance coefficient *that is based upon the value of that pixel!*". In the Advisory Action dated April 28, 2006, reference is made to the Murakami patent, at column 6, lines 21-31 and 47-51 in connection with this claimed feature.

Referring to Figure 1 of the Murakami patent, it discloses that image data stored in a buffer 100 is first fed to a partial sum calculator 510, which counts the number of white pixels in each of six regions of a 5x5 block of data. The resulting values are then fed to each of three coefficient multipliers 600, 630 and 670, which "multiply their input data by their predetermined coefficients." (Column 7, lines 51-52). In other words, these three coefficient multipliers each process the image data, in parallel. Each coefficient multiplier has a different set of coefficients that are applied to the image data. Figures 7A, 7B and 7C illustrate three examples of coefficients that might be employed in the respective coefficient multipliers.

After undergoing range adjustment and gamma correction in respective conversion tables 700, 730 and 770, one of the three sets of data is selected by a selector 400. The operation of the selector 400 is explained in the passages at column 6, lines 19-31 and 47-51. Basically, a detector 200 counts the number of white pixels in the 5x5 block being processed. This count value is used by a restoration coefficient detector 300, which sends a control signal to the selector 400 to select one of the three sets of values corresponding to the three sets of coefficients.

As set forth in MPEP §2131, "To anticipate a claim, the reference must teach every element of the claim." For at least two reasons, the Murakami patent does not disclose every element recited in claim 2.

First, claim 2 recites the step of *deriving*, for each pixel of the neighborhood, a significance coefficient that is based upon the value of that pixel. Thus, the coefficient value for a pixel is individually determined for that pixel, based on its particular value. The Murakami patent does not disclose that a coefficient value is *derived* for each pixel, on the basis of the value of that pixel. Rather, the coefficients that are applied in the multipliers 600, 630 and 670 are *predetermined*. See the passage at column 7, lines 51-52. In other words, the exemplary sets of coefficients illustrated in Figures 7A, 7B and 7C remain constant, and are applied to *all* of the pixels being processed. They are established ahead of time, and are independent of the values of the pixels themselves. As such, the coefficient that is applied to any given pixel cannot be considered to be "derived" from the value of that pixel.

Second, the Murakami patent does not disclose that the selection of a coefficient that is applied to a given pixel is "based upon the value of *that* pixel". Rather, it discloses that the selector 400 is controlled in accordance with the total number of white pixels appearing in a block of 25 pixels. Consequently, the value of any given pixel within the block does not influence the coefficient that is selected for that pixel. Rather, it is only the *collective* values of all of the pixels in the block that determine which coefficient matrix is chosen for that entire block. In other words, whether a given pixel is white or black is irrelevant, in so far as the particular coefficient that is applied to that pixel. It is only the sum of all white pixels that determines the matrix of predetermined coefficients that are collectively applied to all of the pixels in the block.

At a minimum, therefore, the Murakami patent does not disclose the claimed step of "*deriving* for each pixel of the neighborhood, a significance coefficient that is based upon the

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value of *that pixel*", as recited in claim 2. As such, it does not meet the standard that is required to support a rejection based upon anticipation.

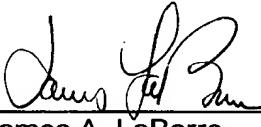
Independent claim 16 recites the same distinguishing features, and therefore is not anticipated as well. The rejections of all of the other dependent claims are based upon the same reference, and consequently are also not supportable.

The final Office Action does not establish a record that is appropriate for proceeding to an appeal. Withdrawal of the Office Action is respectfully requested.

Respectfully submitted,

BUCHANAN INGERSOLL PC

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